REMARKS

Claims 1-15 are pending in this application. Reconsideration and allowance of the present application are respectfully requested.

In the Office Action dated August 4, 2004, Claims 1-5 and 9-15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Akimoto et al. (U.S. Patent No. 6,359,688) in view of Takahashi et al. (U.S. Patent No. 6,522,388). Applicants respectfully traverse this rejection.

Independent Claim 1 of the present application recites a lithographic projection apparatus that includes, *inter alia*, a projection system positioning module that controls at least one of a position and an orientation of the projection system based on at least one of a velocity and an acceleration of the projection system. The combination of Akimoto et al. and Takahashi et al. do not disclose or suggest the lithographic projection apparatus of Claim 1.

Akimoto et al. discloses the use of vibration sensors (16Dy and 16Uy) to detect the vibration of the projection optical system (PO) (Akimoto et al. at col. 11, lns. 20-22) so that "the error inflicted upon exposure precision owing to vibration of the projection optical system PO can be corrected at the reticle stage 8 and the wafer stage 12 jointly or at either stage singly." (Akimoto et al. at col. 14, lns. 5-8.) Akimoto et al. does not teach or suggest a projection system positioning module that controls at least one of a position and an orientation of the projection system based on at least one of a velocity and an acceleration of the projection system, as recited in Claim 1.

Takahashi et al. discloses the use of a vibration eliminator to reduce local vibrations between separate support structures within the apparatus so that the separate support structures may act as one rigid unit. (Takahashi et al. at col. 3, lns. 16-41.) The vibration eliminator includes acceleration sensors (50A-D) provided on a supporting member (20), acceleration sensors (52A-D) provided on a supported member (48), and actuators (46A-D) that are located between the supporting member (20) and the supported member (48). (Takahashi et al. at col. 11, lns. 17-46.) Although the projection lens (PL) is supported by the supporting member (20), nowhere does Takahashi et al. teach or suggest a projection system positioning module that controls at least one of a position and an orientation of the projection system based on at least one of a velocity and an acceleration of the projection system, as recited in Claim 1.

Because neither Akimoto et al. nor Takahashi et al. teach or suggest a projection system positioning module that controls at least one of a position and an orientation of the

projection system based on at least one of a velocity and an acceleration of the projection system, even if Akimoto et al. and Takahashi et al. were combined, which Applicants in no way concede would be proper, the combination does not teach or suggest all of the claim limitations. Therefore, Applicants respectfully submit that a prima facie case of obviousness has not been established, as required by MPEP § 2143, and the rejection of Claim 1, and Claims 2-5, and 9-12 that depend therefrom, is improper.

Accordingly, Applicants respectfully submit that Claims 1-5, and 9-12 are patentable over Akimoto et al. in view of Takahashi et al., and respectfully request that the rejection be withdrawn.

Independent Claim 13 recites a lithographic projection apparatus that includes, *inter alia*, a projection system positioning module that controls at least one of a position and an orientation of the projection system during projection of the patterned beam of radiation onto the target portion of the substrate. The combination of Akimoto et al. and Takahashi et al. do not disclose or suggest the lithographic projection apparatus of Claim 13.

The teachings of Akimoto et al. nor Takahashi et al. are discussed above. Because neither Akimoto et al. nor Takahashi et al. teach or suggest a projection system positioning module that controls at least one of a position and an orientation of the projection system during projection of the patterned beam of radiation onto the target portion of the substrate, even if Akimoto et al. and Takahashi et al. were combined, which Applicants in no way concede would be proper, the combination does not teach or suggest all of the claim limitations. Therefore, Applicants respectfully submit that a prima facie case of obviousness has not been established, as required by MPEP § 2143, and the rejection of Claim 13 is improper.

Accordingly, Applicants respectfully submit that Claim 13 is patentable over Akimoto et al. in view of Takahashi et al., and respectfully request that the rejection be withdrawn.

Independent Claim 14 recites a device manufacturing method that includes, *inter alia*, measuring at least one of a velocity and an acceleration of the projection system, and positioning the projection system by controlling at least one of a position and an orientation of the projection system, based on at least one of the velocity and the acceleration. The combination of Akimoto et al. and Takahashi et al. do not disclose or suggest the device manufacturing method of Claim 14.

Akimoto et al. teaches measuring a vibration of the projection system (See Akimoto et al. at col. 11, lns. 20-22), but does not teach or suggest positioning the projection system by

controlling at least one of a position and an orientation of the projection system, based on at least one of the velocity and the acceleration. Instead, Akimoto et al. teaches positioning the reticle stage (8) and/or the wafer stage (9) in response to the sensing of vibration of the projection optical system (PO). (Akimoto et al. at col. 11, 20-29.) Nowhere does Akimoto et al. teach or suggest positioning the projection system by controlling at least one of a position and an orientation of the projection system, based on at least one of the velocity and the acceleration.

Takahashi et al. teaches measuring acceleration between two different support structures (20, 48) and compensating for the measured acceleration with actuators (46A-D) that are located between the support structures (20, 48). (See Takahashi et al. at col. 11, lns. 17-46.) Nowhere does Takahashi et al. teach or suggest measuring at least one of a velocity and an acceleration of the projection system, and positioning the projection system by controlling at least one of a position and an orientation of the projection system, based on at least one of the velocity and the acceleration.

Because neither Akimoto et al. nor Takahashi et al. teach or suggest positioning the projection system by controlling at least one of a position and an orientation of the projection system, based on at least one of the velocity and the acceleration, even if Akimoto et al. and Takahashi et al. were combined, which Applicants in no way concede would be proper, the combination does not teach or suggest all of the claim limitations. Therefore, Applicants respectfully submit that a prima facie case of obviousness has not been established, as required by MPEP § 2143, and the rejection of Claim 14, and Claim 15 that depends therefrom, is improper.

Accordingly, Applicants respectfully submit that Claims 14 and 15 are patentable over Akimoto et al. in view of Takahashi et al., and respectfully request that the rejection be withdrawn.

In the Office Action, Claims 6-8 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Akimoto et al. in view of Takahashi et al., and further in view of Wakui (U.S. Patent No. 6,327,026). Applicants respectfully traverse this rejection.

Claims 6-8 depend from Claim 2, which depends from Claim 1, and include, *inter alia*, the feature of the projection system being mounted in 6 degrees of freedom. As discussed above, Claims 1 and 2 are patentable over Akimoto et al. in view of Takahashi et al. Wakui does not make up for the deficiencies of Akimoto et al. and Takahashi et al. Wakui discloses a parallel link mechanism that may be used to position a movable plate that

supports a wafer or a reticle. (Wakui at col. 3, lns. 3-7.) The movable plate (19) has six degrees of freedom. (Wakui at col. 6, lns. 23-27.) Nowhere does Wakui teach or suggest a projection system positioning module that controls at least one of a position and an orientation of the projection system based on at least one of a velocity and an acceleration of the projection system, as recited in Claim 1. Moreover, no where does Wakui teach or suggest a projection system being mounted in 6 degrees of freedom, as recited in Claim 6.

Therefore, Applicants respectfully submit that a prima facie case of obviousness has not been established, as required by MPEP § 2143, and the rejection of Claim 6 and Claims 7 and 8 that depend therefrom, is improper. Accordingly, Applicants respectfully submit that Claims 6-8 are patentable over Akimoto et al. in view of Takahashi et al., and further in view of Wakui, and respectfully request that the rejection be withdrawn.

All rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited. If any point remains at issue which the Examiner feels may best be resolved through a personal or telephone interview, please contact the undersigned at the telephone number below.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,
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